

WHAT IS CLAIMED IS:

1. A deposited-film formation apparatus
comprising:

an inside-evacuatable chamber;

5 a gas feed piping for feeding a material gas into
the chamber;

an evacuation means for evacuating the inside of
the chamber;

10 a first evacuation piping which connects the
chamber and the evacuation means; and

a second evacuation piping for guiding evacuation
through the evacuation means, wherein,

15 the deposited-film formation apparatus has a
temperature sensor which detects the heat of reaction
that is generated when the material gas fed into the
chamber reacts with oxygen contained in air having
entered from the outside of the deposited-film
formation apparatus.

20 2. The deposited-film formation apparatus
according to claim 1, wherein the temperature sensor is
provided on an outer wall surface of the chamber or at
the evacuation piping.

25 3. The deposited-film formation apparatus
according to claim 1, wherein the temperature sensor is
provided on the side downstream to the evacuation means.

4. The deposited-film formation apparatus
according to claim 1, wherein the first evacuation
piping or the second evacuation piping has a piping
connection part, and the temperature sensor is provided
5 on the side downstream to the piping connection part.

5. The deposited-film formation apparatus
according to claim 1, which has a leak judgment means
which judges the occurrence of a leak on the basis of a
10 measured value of the temperature sensor, and a
feed-gas feed control means which stops the feeding of
material gases upon detection of a leak by the leak
judgment means.

15 6. The deposited-film formation apparatus
according to claim 1, which has the chamber in
plurality and a means for moving a beltlike member
continuously through the insides of the chambers in
their lengthwise direction.

20 7. A deposited-film formation process comprising
the steps of:

evacuating the inside of an inside-evacuatable
chamber through an evacuation piping by an evacuation
25 means;

feeding a material gas into the chamber while
evacuating the inside of the chamber; and

applying a high-frequency power to form a deposited film on a substrate disposed inside the chamber, wherein,

a leak is detected on the basis of a measured value of a temperature sensor which detects the heat of reaction that is generated when the material gas fed into the chamber reacts with oxygen contained in air having entered from the outside, so as to be able to stop the material gas feeding.

8. The deposited-film formation process according to claim 7, wherein the leak is detected on the basis of an increase in a measured value of the temperature sensor.

9. The deposited-film formation process according to claim 7, wherein the temperature sensor is provided on an outer wall surface of the chamber or at the evacuation piping.

10. The deposited-film formation process according to claim 7, wherein the temperature sensor is provided on the side downstream to the evacuation means.

11. The deposited-film formation process according to claim 7, wherein the evacuation piping has

a piping connection part, and the temperature sensor is provided on the side downstream to the piping connection part.

5 12. The deposited-film formation process according to claim 7, wherein the deposited film is formed on the substrate while the substrate is continuously moved in its lengthwise direction.

10 13. A deposited-film formation apparatus comprising:

 a chamber;

 a gas feed piping for feeding a reactive material gas into the chamber; and

15 an evacuation means and an evacuation piping by and through which the inside of the chamber is evacuated, wherein,

 the deposited-film formation apparatus has at least one temperature sensor and a leak judgment means
20 which judges the occurrence of a leak on the basis of a measured value of the temperature sensor.

 14. The deposited-film formation apparatus according to claim 13, wherein the temperature sensor
25 is provided in plurality, and the leak judgment means judges the leak to have occurred when the measured values of the temperature sensor provided in plurality

increase.

15. The deposited-film formation apparatus according to claim 14, wherein the temperature sensors
5 are provided along the flow of gas, and the leak judgment means judges the leak to have occurred when the measured values of the temperature sensors increase along the flow of gas.

10 16. A vacuum system comprising:
a chamber;
a gas feed means for feeding a gas into the chamber; and
an evacuation means and an evacuation piping by
15 and through which the inside of the chamber is evacuated, wherein,

the vacuum system has a temperature sensor which detects the heat of reaction that is generated when the material gas fed into the chamber reacts with oxygen
20 contained in air having entered from the outside of the deposited-film formation apparatus.

17. A leak judgment method comprising the steps of:
25 feeding a reactive gas to the inside of a vacuum system having a chamber and an evacuation piping;
measuring temperature of the vacuum system at a

plurality of spots thereof; and

judging the occurrence of a leak on the basis of a change with time of a plurality of measured values obtained by measuring the temperature.

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18. The leak judgment method according to claim 17, wherein the leak is judged to have occurred when the plurality of measured values increase.

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19. The leak judgment method according to claim 17, wherein the temperature of the vacuum system is measured at a plurality of spots thereof along the flow of gas in the vacuum system, and the leak is judged to have occurred when the plurality of measured values obtained by measuring the temperature increase along the flow of gas.

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20. The leak judgment method according to claim 17, wherein an average value of the temperature of the evacuation piping is found to regard it as a reference value, and the occurrence of a leak of the vacuum system is judged on the basis of a change with time with respect to the reference value, in the plurality of measured values.

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21. The leak judgment method according to claim 20, wherein a value greater than the reference value is

set as a warning value in advance, and the leak is judged to have occurred when the plurality of measured values become greater than the warning value.

- 5 22. A computer-readable recording medium with a recorded program which is able to execute judgment on the occurrence of a leak of a vacuum system having a chamber into which a reactive gas is to be fed and having an evacuation piping, wherein,
- 10 the recorded program is a program for executing the step of totaling a plurality of measured values obtained by measuring temperature of the vacuum system at a plurality of spots thereof, and the step of judging the occurrence of a leak on the basis of a
- 15 change with time of the plurality of measured values.
23. The computer-readable recording medium with a recorded program according to claim 22, which judges the leak to have occurred when the plurality of
- 20 measured values increase.
24. The computer-readable recording medium with a recorded program according to claim 22, which judges the leak to have occurred when the plurality of
- 25 measured values increase along the flow of gas.
25. The computer-readable recording medium with a

recorded program according to claim 22, wherein the
recorded program is a program for executing the step of
finding an average value of the temperature of the
evacuation piping to regard it as a reference value,
5 and the step of judging the occurrence of a leak of the
vacuum system on the basis of a change with time with
respect to the reference value, in the plurality of
measured values.

10 26. The computer-readable recording medium with a
recorded program according to claim 25, wherein the
recorded program is a program for executing the step of
setting a value greater than the reference value as a
warning value in advance, and the step of comparing the
15 plurality of measured values with the warning value to
judge the leak to have occurred when the plurality of
measured values become greater than the warning value.